

25. (Newly Added) The carriage for an inkjet printer of claim 23, wherein said ink reservoir is detachably secured to said ink reservoir mounting-portion.

REMARKS

A first Office Action, dated March 13, 2002, rejects pending claims 1-20. Claims 1, 5, 12, & 17 have been rewritten herein, and new claims 21-25 have been added. Reconsideration is respectfully requested in light of the amendments and the following remarks.

Formalities

Applicants have corrected the examiner noted discrepancies with the drawings, specification and claims. Namely, missing spaces between element names and element numbers in the specification have been corrected, and Claims 1, 12, and 17 have been amended as noted to clarify the scope of protection sought and better conform with the disclosed embodiment. Moreover, figures 12 and 13 have been corrected to include element number 114 (handle), and better identify element numbers 120 (moment arm) and 118 (moment arm).

Applicants note that the access door (element 94) of claim 17 can be found in FIG. 1 as originally submitted. In addition, the term "(FIG.1)" has been added behind reference to this element in the specification on page 8, line 5.

Claim Rejections Under 35 USC § 102(e)

Applicants respectfully traverse the examiner's rejection of claims 1-5 and 8-16 as being anticipated by Miyazawa et al. (U.S. Pat. No. 6,250,750). Miyazawa et al. discloses a fundamentally different structure.

As explained more fully in the specification of the present application, among other benefits, the carriage assembly of the present application provides an on-axis ink reservoir that allows easy and independent access to both the ink reservoir and the printhead.

In contrast and as shown in the below figures, Miyazawa et al. discloses an ink cartridge alignment and capture structure that does not allow independent access to both an ink reservoir and printhead.

FIG. 12(b)

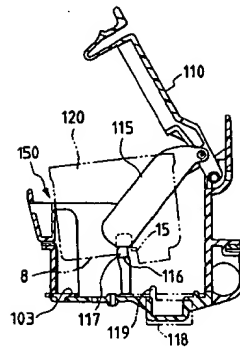
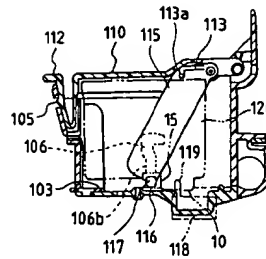


FIG. 12(d)



FIGS. 12(b) and 12(d) of Miyazawa et al. (U.S. Pat. No. 6,250,750).

In particular, Miyazawa et al. teaches inserting an ink cartridge 120 into a carriage 101 with an open carriage cover body 110 as shown in FIG. 12(b) such that the lower portion of the ink cartridge engages a support rod 117, which has been lifted by a lifter 115 extending between the support rod 117 and the carriage cover body 110. By placing the carriage cover body 110 in its closed position as shown in FIG. 12(d), the support rod 117 and connected ink cartridge are guided into the carriage. The carriage cover body includes a catching piece 112 to detachably hold the carriage cover body in its closed position, thereby securing the ink cartridge 120 within the carriage.

Claim 1:

Turning to the claims of the present application, claim 1 specifically requires a first mounting portion operably secured to a printhead, and a second mounting portion operably secured to an ink reservoir in a secured position with the first and second mounting portion pivotally secured together at a pivot point. In addition, the ink reservoir has “an engaged position in which the ink reservoir is in fluid communication with said printhead when said ink reservoir is in said secured position, and an open position, in which the second mounting portion is pivoted about said pivot point away from said first mounting portion and said ink reservoir remains in said secured position thereby pivoting said ink reservoir about said pivot point away from the printhead . . . ” (emphasis added).

Claim 12:

Similarly, claim 12 requires “an ink reservoir operably secured to said carriage in a secured position such that said ink reservoir may pivot about said printhead at a pivot point while remaining in said secured position, said carriage having an engaged

position in which the ink reservoir is in fluid communication with said printhead when said ink reservoir is in said secured position, and an open position, in which the ink reservoir is pivoted about said pivot point away from said printhead, thereby providing easy access to the printhead.” (emphasis added).

New Claim 21:

Also, new claim 21, requires a second mounting portion “having an engaged position in which the ink reservoir is in fluid communication with said printhead when said ink reservoir is in said secured position, and an open position in which the second mounting portion is moved away from the first mounting portion along the defined path and said ink reservoir remains in said secured position thereby providing easy access to the printhead without detaching said ink reservoir from said secured position on said second mounting portion.”

Miyazawa et al. discloses no such structures. For example, no structures in Miyazawa et al. teach or suggest pivoting an ink reservoir about a pivot point while keeping the ink reservoir operably engaged in a secure position on a mounting portion of the carriage. (Claims 1 and 12). Similarly, Miyazawa et al. neither teaches nor suggests any ink reservoirs remaining in a secured position on a second mounting portion when that mounting portion is moved away from a first mounting portion containing a printhead (Claim 21). Accordingly, a maintainer of the Miyazawa et al. device must physically remove the ink cartridge from its carriage before gaining access to any printheads positioned below the ink cartridge.

Since Miyazawa et al. neither teaches nor suggest these essential elements of independent claims 1, 12 and 21, they cannot be rendered obvious or anticipated by this reference, and they should be allowed. Moreover, since dependent claims 2-11, 13-16, and 22-25 depend on these now allowable claims, they too should be in condition for allowance.

Claim Rejections Under 35 USC § 103

Applicants respectfully traverse the examiner's rejection of claims 6, 7 and 17-20 as being rendered obvious by Miyazawa et al. (U.S. Pat. No. 6,250,750) in view of Inoue et al. (U.S. Pat. No. 5,619,237) and Oda et al. (U.S. Pat. No. 5,552,816).

None of these references, alone or in combination, teach or suggest the elements of the present claims. As previously noted, Miyazawa discloses an ink

cartridge alignment and capture structure that does not allow independent access to both an ink reservoir and printhead. Similarly, Inoue and Oda disclose conventional drop-in type ink cartridge mounts, none of which allow an on-axis ink reservoir to remain seated in its mount while a printhead is being replaced.

While Oda provides for a printhead cartridge being detachably secured to a base, there is no teaching or suggestion in any references of record to provide such a printhead in combination with an on-axis ink reservoir that remains seated in its mount but is still movable out of the way to provide easy access to such a detachable printhead. Rather, Oda et al. appears to teach away from such a structure by detachably securing the ink tank "T" to the head cartridge "H," making it impossible to remove the head cartridge "H" without also removing the ink tank "T" from the carriage.

Since these teachings are missing from these references of record, they cannot render claims 6 and 7 obvious. Accordingly, they should be allowed.

Similarly, independent method claim 17 specifically requires the step of "pivoting the ink reservoir out of its engaged position such that the first printhead is exposed and easily accessible in the carriage while maintaining said ink reservoir in said secured position" (emphasis added). However, no references of record teach or suggest such a method, primarily because they do not disclose any structures capable of operating in such a manner.

Accordingly, independent claim 17 should now be in condition for allowance. Moreover, since dependent claims 18-20 depend on this now allowable claim, they too should be in condition for allowance.

In view of the foregoing, applicants submit that all of the currently pending claims are in condition for allowance, and respectfully requests that the case be passed to issuance. If the Examiner has any questions, he is invited to contact applicants' attorney at the below-listed telephone number.

Respectfully submitted,

June 13, 2002

By


John R. Dawson
Registration No. 39,504

ipsolon llp
805 SW Broadway # 2740
Portland, Oregon 97205
Phone No. (503) 419-0702
Fax No. (503) 249-7068
E-Mail: john@ipsolon.com

Attachment A to Amendment
(Redlined amendments to specification)



In the next two paragraphs beginning on page 8, line 2:

The pivoting connection between the ink reservoir-mounting portion 50 and the printhead mounting-portion 52 permits easy access to the printheads 32a-d for maintenance, service, or replacement. In particular, the carriage 30 can be positioned along the guide rod 40 to permit easy access to the carriage 30 through an access door 94 (FIG. 1) in the chassis 26 of the printer 20.

With the carriage 30 so positioned, the [service]servicer lifts the ink reservoir-mounting portion 50 causing it to pivot about pivot point 56 and move to the open position 60, thereby exposing the printhead mounting-portion 52 and providing access to the printheads 32a-d.

In the paragraph beginning on page 9, line 5:

As best shown in FIG. 10, in order to prevent the ink reservoir-mounting portion 50 from inadvertently falling out of its open position 60 during maintenance, a resistive detent 108 may be positioned in one of the ink reservoir-mounting portion 50 or the printhead mounting-portion 52. The resistive detent 108 operably engages a tab 110 extending from the other of the ink reservoir-mounting portion 50 or the printhead mounting-portion 52 when the ink reservoir-mounting portion 50 is in its open position 60, thereby holding the ink reservoir-mounting portion 50 in place.

In the paragraph beginning on page 9, line 13:

Preferably, a latching mechanism 112 is provided to secure the ink reservoir-mounting portion 50 in its engaged position 58 (FIG. 2). Moreover, because of the relatively large forces associated with deflecting the rods 98 of the ink flow valves out of their neutral positions, it is desirable that the latching mechanism 112 operate as a lever, thereby minimizing the amount of force required by a user to secure the lever. As best shown in FIG. 12, the latching mechanism 112 preferably includes a handle 114 pivotally secured to the ink reservoir-mounting portion 50 at a pivot 116 such that the handle 114 defines a lever arm 118 on one side of the pivot 116 and a moment arm 120 on the other side of the pivot 116. A left and right joining arm 122a, 122b, respectively, are pivotally secured to the moment arm 120 at a point spaced apart for

the pivot 116. The opposite ends 124 of the joining arms 122a, 122b include openings 126 for receiving hooks 128 extending from the printhead mounting-portion 52.

In the next two paragraphs beginning on page 11, line 5:

The rearward-mounting end 142 of the ink reservoirs 24a, 24b preferably includes left and right rearward mounting end guides 158a, 158b sized to slidably engage respective mating slots 160a, 160b received on the respective side walls of the ink reservoir chambers 80a, 80b. A lever 162, operably secured toward the lower portion 164 of the rearward-mounting end 142 of the ink reservoirs 24a, 24b is biased to an extended position 166 (shown in FIG. 2). The lever 162 includes a notch 168 extending therefrom for operably engaging a lip 170 (FIG. 5) on the forward flange 72 of the ink reservoir-mounting portion 50, thereby detachably securing the ink reservoirs 24a, 24b to the ink reservoir mounting-portion 50.

Each ink reservoir 24a, 24b is installed into its respective ink reservoir chamber 80a, 80b by the installer first placing the toe end 140 into the respective ink reservoir chamber 80a, 80b such that the left and right toe-end guides 146a, 146b slidably engage guide rails 150. The user slides the toe end 140 of the ink reservoir 24a, 24b toward the toe-end guide receptacles 152. When the toe-end guides 146a, 146b are seated in their respective receptacle 152, the user then presses down on the upper surface 172 of the ink reservoir 24a, 24b toward the rearward-mounting end 142, causing the left and right rearward mounting end guides 158a, 158b to slidably engage their respective mating slots 160a, 160b, and thereby properly positing the ink reservoirs 24a, 24b into their respective ink reservoir chambers 80a, 80b.

In the paragraph beginning on page 12, line 4:

However, if an installer attempts to install an ink reservoir 24a, 24b in another manner besides using the toe-heel installation process, the cover 180 blocks the toe end 140 of the ink reservoir 24a, 24b from entering the respective ink reservoir chambers 80a, 80b, thereby alerting the installer of the improper installation. For example, if an installer would first attempt to secure the notch 168 extending from the lever 162 to the lip 170 on the forward flange 72, and then attempt to lower the toe end 140 of the ink reservoir 24a, 24b into the respective ink reservoir chamber 80a, 80b, the mounting portion cover 180 blocks the toe end 140 of the ink reservoir 24a, 24b from entering the respective ink chamber 80a, 80b, thereby alerting the installer of the

improper installation method. Similarly, if the installer attempts insert an ink reservoir 24a, 24b into the ink reservoir chamber 80a, 80b simply by maintaining the bottom surface 190 of the ink reservoir parallel to the lower surface 192 of the respective ink reservoir chamber 80a, 80b, the mounting portion cover 180 blocks the toe end 140 of the ink reservoir 24a, 24b from entering into the respective ink reservoir chambers 80a, 80b.

In the paragraph beginning on page 14, line 3:

Also, should an installer improperly latch the lever 162 as described, the spring 210 will urge the rearward-mounting end 142 of the ink reservoir 24a upward, thereby visually alerting the user of the improper installation. Preferably, the printer chassis 26 includes defined stops (not shown) that operably engage the rearward-mounting end 142 when the ink reservoir 24a is in its uninstalled position 212 shown in FIG. 5. The location of the carriage 30 when the rearward-mounting end 142 contacts these stops can then be used to signal the user of the improper ink reservoir 24a installation via a computer interface, warning light, or the like.

In the paragraph beginning on page 14, line 14:

In general, each detachable printer component, such as the ink reservoirs 24a, 24b shown in FIG. 2, includes a unique pattern of identifying tabs 220a-f extending therefrom. For example, the left ink reservoir 24a includes tabs 220a-c, two of which are to the left of the left ink reservoir's lever 162, and the right ink reservoir 24b includes tabs 220d-f, two of which are to the right of the right ink reservoir's lever 162. This pattern of tabs 220a-f can be used to indicate the type, color, and/or quality of ink contained that particular printer. For example, the tab pattern for the left ink reservoir 24a can indicate that it contains black ink, and the tab pattern displayed on the right ink reservoir 24b can indicate that the right ink reservoir is a multi-chamber reservoir containing blue, magenta, and yellow colored ink.

Attachment B to Amendment
(Redlined amendments to claims)

1. (Amended) A carriage for an inkjet printer comprising:
a first mounting portion;
a printhead operably secured to said first mounting portion;
a second mounting portion [an ink reservoir] pivotally secured to said first mounting portion at a pivot point;
an ink reservoir operably secured to said second mounting portion in a secured position and having an engaged position in which the ink reservoir is in fluid communication with said printhead when said ink reservoir is in said secured position, and an open position, in which the [ink reservoir]second mounting portion is pivoted about said pivot point away from said [printhead,] first mounting portion and said ink reservoir remains in said secured position thereby pivoting said ink reservoir about said pivot point away from the printhead and providing easy access to the printhead without detaching said ink reservoir from said second mounting portion.

5. (Amended) The carriage for an inkjet printer of claim 1, wherein said first mounting portion is a printhead mounting-portion and [further including]said second mounting portion is an ink reservoir mounting-portion; and wherein said printhead mounting-portion is pivotally secured to said ink reservoir mounting-portion at said pivot point.

12. (Amended) An inkjet printer comprising:
a chassis;
a motor;
a carriage operably secured to the chassis and driven by the motor for reciprocal movement relative to the chassis;
a printhead operably secured to said carriage;
an ink reservoir operably secured to said carriage in a secured position such that [it]said ink reservoir may pivot about said printhead at a pivot point while remaining in said secured position, said carriage having an engaged position in which the ink

reservoir is in fluid communication with said printhead when said ink reservoir is in said secured position, and an open position, in which the ink reservoir is pivoted about said pivot point away from said printhead, thereby providing easy access to the printhead.

17. (Amended) A method for replacing a first printhead operably secured to a carriage of an inkjet printer with a second printhead, the inkjet printer having an on-axis ink reservoir pivotally secured to the carriage defining a secured position of the ink reservoir with respect to the ink reservoir mounting-portion and defining an engaged position in which the ink reservoir is in fluid communication with the printhead, said method including the steps of:

locating the carriage containing the first printhead;

pivoting the ink reservoir out of its engaged position such that the first printhead is exposed and easily accessible in the carriage while maintaining said ink reservoir in said secured position, and thereby automatically disconnecting the fluid communication between the ink reservoir and the first printhead;

removing the first printhead from the carriage;

installing the second printhead in the carriage such that the second printhead is operably secured to the carriage; and,

returning the ink reservoir to its engaged position thereby automatically placing the ink reservoir and second printhead in fluid communication with each other without removing said ink reservoir from said carriage.

--21. (Newly added) A carriage for an inkjet printer comprising:

a first mounting portion;

a printhead operably secured to said first mounting portion;

a second mounting portion operably secured to said first mounting portion such that said second mounting portion moves toward and away from said first mounting portion along a defined path;

an ink reservoir operably secured to said second mounting portion in a secured position.

said second mounting portion having an engaged position in which the ink reservoir is in fluid communication with said printhead when said ink reservoir is in said secured position, and an open position in which the second mounting portion is moved

away from the first mounting portion along the defined path and said ink reservoir remains in said secured position thereby providing easy access to the printhead without detaching said ink reservoir from said secured position on said second mounting portion.

22. (Newly added) The carriage for an inkjet printer of claim 21, wherein said first mounting portion is pivotally secured to said second mounting portion at a pivot point.

23. (Newly added) The carriage for an inkjet printer of claim 21, wherein said first mounting portion is a printhead mounting-portion and said second mounting portion is an ink reservoir mounting-portion.

24. (Newly added) The carriage for an inkjet printer of claim 23, wherein said printhead is detachably secured to said printhead mounting-portion.

25. (Newly added) The carriage for an inkjet printer of claim 23, wherein said ink reservoir is detachably secured to said ink reservoir mounting-portion.--

Attachment C to Amendment
(Redlined and formal replacement drawing sheets 6 and 7)

a

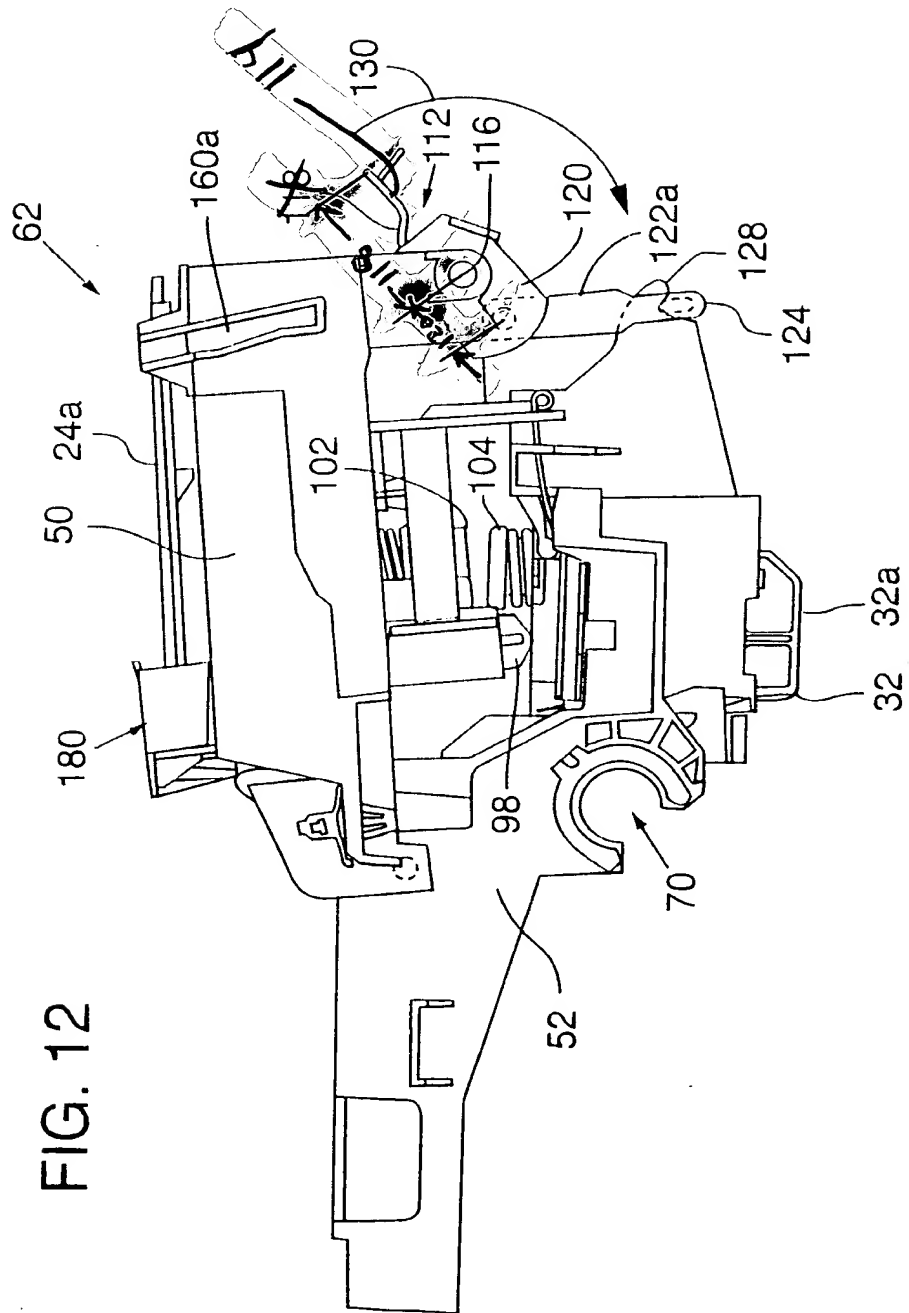


FIG. 13

